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MEMORANDUM

DATE 11 January 1999

TO: David Bennett, WAM, U S. EPA, Region X

FROM: Michelle Turner, Chemist, WESTON, Seattle
Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle

SUBJECT Validation of Polychlorinated Biphenyls (Aroclor) Data
Laboratory Batch K9806584
Site: Duwamish River

WORK ASSIGNMENT NO 46-23-0JZZ

WORK ORDER NO.: 4000-019-038-5200-00

DOC CONTROL NO.: 4000-019-038-AAAK

cc: Bruce Woods, RAP-WAM, U.S. EPA, Region X
Dena Hughes, Site Manager, WESTON, Seattle (memo only)
Kevin Mundell-Jackson, Database Management, WESTON, Seattle

The quality assurance review of fifteen sediment samples, laboratory batch K9806584, collected from the Duwamish River has been completed. Samples were analyzed for polychlorinated biphenyls as Aroclors using EPA Method 8082 by Columbia Analytical Services of Kelso, Washington. The samples were numbered:

98394020	98394021	98394022	98394023	98394024
98394025	98394026	98394027	98394028	98394029
98394030	98394031	98394032	98394033	98394034

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria described in the technical specifications of the laboratory subcontract. The review follows the format described in the *National Functional Guidelines for Organic Data Review* (EPA OSWER Directive 9240 1-05, February 1994)

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Site Duwamish River

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1 Timeliness

All samples were extracted 50 days after sample collection, exceeding the 14 day holding time criteria in the Sampling and Analysis Plan. However, prior to extraction, samples were stored frozen, thus extending the holding time. Samples were extracted within the 12 month holding time recommended by PSEP for frozen samples.

2. Initial Calibration

a) Mixed Aroclor 1016/1260 Standard

- A six point initial calibration was performed. Calibration factors were calculated for a minimum of five peaks, none of which are common to both Aroclors. The calibration factor percent relative standard deviation (%RSD) was less than 20 percent for all peaks used for quantitation.

b) Individual Aroclor Standards

Calibration factors were calculated from a mid-range standard for the other 5 Aroclors using 3 to 5 peaks.

3. Calibration Verification

Aroclor 1016/1260 calibration verification standards were analyzed every 12 hours using a midrange standard. The calibration factor percent difference was less than 25 percent of the initial calibration value.

4 Retention Time Windows

Retention Time Windows were calculated from initial calibration. Retention times for calibration verification standards were within established windows.

5 Detection Limits

Instrument detection limits met project required quantitation limits.

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QA Review Batch K9806584 (PCB Aroclors)

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6. Blanks

a) Laboratory Method Blanks

Laboratory method blank frequency criteria were met.

No target analytes were reported in laboratory method blanks.

b) Field Blanks

No field blanks were associated with this laboratory batch

7. System Monitoring Compounds (Surrogates)

Surrogate compound percent recovery met quality control criteria for all samples.

8 Matrix Spike and Matrix Spike Duplicate

All matrix spike (MS), matrix spike duplicate (MSD) and relative percent difference (RPD) results were within QC limits

9. Laboratory Control Sample (LCS) Analysis

LCS recovery goals for Aroclors were established in the project Sampling and Analysis Plan at 70 to 130% for sediment. Based on conversations with the laboratory, historical control chart limits of 26 – 142 for Aroclor 1016 and 40-139 for Aroclor 1260 were also used for data qualification

All LCS percent recoveries met QC guidelines

10. Field Duplicate Analysis

Samples 98394027 and 98394029 were field duplicates. Analytes were detected in sample 98394027, but not detected in sample 98394029. Results were qualified as estimated (J)

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QA Review Batch K9806584 (PCB Aroclors)

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Samples 98394028 and 98394030 were field duplicates. Analytes were detected in sample 98394030, but not detected in sample 98394028. Results were qualified as estimated (J).

11. Second Column Confirmation

The Relative Percent Difference (RPD) in reported analyte concentration was less than 35 percent for the primary and confirmation column for all samples

12 Sample Analysis

A cursory review of raw data was performed. All laboratory deliverables were present and complete. A duplicate analysis was performed on 98394029. No analytes were detected in the sample or replicate. The case narrative verified that samples were stored frozen until extraction. No complications were noted in the case narrative.

13. Laboratory Contact

No laboratory contact was required

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values

Data Qualifiers

- U - The compound was analyzed for, but was not detected
- UJ - The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met
- J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less than CRDL or lowest calibration standard.

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- R - Quality control indicates that data are unusable (compound may or may not be present) Resampling and reanalysis are necessary for verification
- N - Presumptive evidence of presence of material (tentative identification).
- I - Elevated reporting limit due to matrix interference

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/22/98
Date Received: 9/23/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394020 Units ug/Kg (ppb)
Lab Code K9806584-001 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/18/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/18/98	69	
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/18/98	39	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

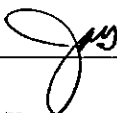
Service Request: K9806584
Date Collected: 9/22/98
Date Received: 9/23/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394021 Units ug/Kg (ppb)
Lab Code K9806584-002 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/18/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/18/98	110	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/18/98	462	
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/18/98	678	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/22/98
Date Received: 9/23/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394022 Units ug/Kg (ppb)
Lab Code K9806584-003 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/18/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	

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Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/22/98
Date Received: 9/23/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98394023	Units	ug/Kg (ppb)
Lab Code	K9806584-004	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/18/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/18/98	26	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/18/98	130	
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/18/98	77	

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Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

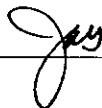
Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394030 Units ug/Kg (ppb)
Lab Code K9806584-005 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/18/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/18/98	218	11/13/99
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/18/98	512	11/13/99

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Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

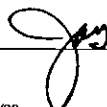
Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394031 Units ug/Kg (ppb)
Lab Code K9806584-006 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/18/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/18/98	128	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/18/98	474	
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/18/98	230	

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Analytical Report

Client: Roy F. Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

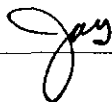
Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394032 Units ug/Kg (ppb)
Lab Code K9806584-007 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/18/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/18/98	33	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/18/98	110	
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/18/98	84	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394033 Units ug/Kg (ppb)
Lab Code K9806584-008 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/18/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/18/98	87	
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/18/98	58	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

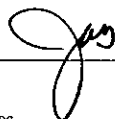
Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394034 Units ug/Kg (ppb)
Lab Code K9806584-009 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/18/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/18/98	32	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/18/98	137	
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/18/98	95	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/22/98
Date Received: 9/24/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394024 Units ug/Kg (ppb)
Lab Code K9806584-010 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/18/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/18/98	272	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/18/98	1100	
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/18/98	560	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

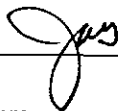
Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394025 Units ug/Kg (ppb)
Lab Code K9806584-011 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/18/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

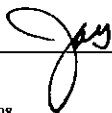
Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394026 Units ug/Kg (ppb)
Lab Code K9806584-012 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/18/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

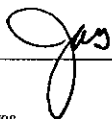
Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394027 Units ug/Kg (ppb)
Lab Code K9806584-013 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/18/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/18/98	80	J
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/18/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/18/98	226	J
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/18/98	163	J

Approved By



Date 11-24-98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394028 Units ug/Kg (ppb)
Lab Code K9806584-014 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/19/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/19/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/19/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/19/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/19/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/19/98	ND	
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/19/98	ND	

Approved By



Date

11-24-98

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11/24/98

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

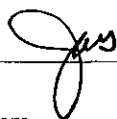
Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98394029 Units ug/Kg (ppb)
Lab Code K9806584-015 Basis Dry
Test Notes

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	11/11/98	11/19/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	11/11/98	11/19/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	11/11/98	11/19/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	11/11/98	11/19/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	11/11/98	11/19/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	11/11/98	11/19/98	ND	
Aroclor 1260	EPA 3550B	8082	20	1	11/11/98	11/19/98	ND	

Approved By



Date

11-24-98

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